# Permit Fact Sheet

## General Information

| | | |
|---|---|---|
| Permit Number: | WI-0020265-10-0 | |
| Permittee Name: | Village of Mukwonago | |
| Address: | 440 Rivercrest Court | |
| City/State/Zip: | Mukwonago, WI, 53149 | |
| Discharge Location: | West bank of the Fox (IL) River, approximately 150 feet upstream of Interstate 43, and 560 feet downstream of the confluence of the Fox (IL) River and Mukwonago River. (Lat: 42.86103°N, Long: -88.297339°W) | |
| Receiving Water: | Fox (IL) River (Upper Fox (IL) River Watershed, Fox (IL) River Basin) in Waukesha County | |
| StreamFlow ($Q_{7,10}$): | 33 cfs | |
| Stream Classification: | Warm water sport fish community; non-public water supply | |
| Design Flow(s) | Daily Maximum | 2.84 MGD |
| | Weekly Maximum | 2.23 MGD |
| | Monthly Maximum | 1.85 MGD |
| | Annual Average | 1.5 MGD |
| Significant Industrial Loading? | No | |
| Operator at Proper Grade? | Yes. Plant is rated as an Advanced facility with subclasses A1, B, C, P, D and SS | |
| Approved Pretreatment Program? | N/A | |

## Facility Description

The Village of Mukwonago Wastewater Treatment Plant (WWTP) serves a population of approximately 7,900 residents from the Village of Mukwonago. The WWTP has no significant industrial contributions but can now accept holding tank and septage tank waste after a receiving station was added near the headworks in 2019. The conventional activated sludge WWTP went online in 1981 and experienced substantial improvements and upgrades during the past 15 years. Processes include mechanical fine screening, grit removal, primary clarification, fine bubble aeration, final clarification, and ultraviolet light for seasonal disinfection. The aeration basins contain an Integrated Fixed Film Activated Sludge (IFAS) system for the improvement of the biological process. Polyaluminum chloride is added near the outlet of the aeration basins for phosphorus removal. Effluent is pumped out of a clear well to the Fox (IL) River approximately 5,000 feet east of the WWTP. Sludge goes through anaerobic digestion and is then transferred to drying beds. The dried sludge is either transferred to another permitted facility or land applied to sites/fields under the Village's permit. The Department has found the facility to be in substantial compliance with the current permit.

| **Sample Point Designation** |
|---|

| Sample Point Number | Discharge Flow, Units, and Averaging Period | Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable) |
|---|---|---|
| 701 | Flow 0.95 MGD; $CBOD_5$ 212.58 mg/L; TSS 385.21 mg/L (All April 2015 through August 2019 avg) | INFLUENT: 24-hour flow proportional composite samples shall be collected, and flow shall be measured from the influent pump discharge pipe. Influent includes recycled flows (drainage from sludge beds and digester supernatant). |
| 001 | $CBOD_5$ 3.65 mg/L; TSS 7.54 mg/L (All April 2015 through August 2019 avg) | EFFLUENT: 24-hour flow proportional composite samples shall be collected after disinfection from the effluent clear well. Grab samples shall be collected after disinfection from the final effluent pump tap. |
| 002 | N/A | Anaerobically digested Class B liquid sludge. Representative sludge samples shall be collected prior to hauling or land applying. This outfall is currently listed as 'inactive' and the permittee will need to notify the Department when a discharge occurs from this outfall. |
| 003 | 600 dry U.S. tons generated annually (per 2019 permit application) | Anaerobically digested, Class B, bed dried, cake sludge. Representative sludge samples shall be collected prior to hauling or land applying. |
| 601 | New sample point added as a condition of adaptive management requirements. | In-stream Sampling Point 601: Representative water samples shall be collected from the Fox (IL) River. Sample point 601 is located downstream of the Mukwonago WWTP outfall, 600 feet downstream of the Hwy 43 bridge (Lat: 42.86762 N Long: -88.29117 W). Sample point 601 correlates with the sample location described in the approved Adaptive Management Plan No. WQT-2020-0009 (May 2020) |

# 1 Influent - Proposed Monitoring

## 1.1 Sample Point Number: 701- INFLUENT PLANT

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | Daily | Continuous | |
| $CBOD_5$ | | mg/L | 3/Week | 24-Hr Flow Prop Comp | |
| Suspended Solids, Total | | mg/L | 3/Week | 24-Hr Flow Prop Comp | |

### 1.1.1 Changes from Previous Permit:

Flow rate sample frequency was changed from “Continuous” to “Daily”.

### 1.1.2 Explanation of Limits and Monitoring Requirements

**Flow Rate:** Flow rate sample frequency was changed from "Continuous" to "Daily to achieve eDMR reporting consistency.

**$CBOD_5$ and Total Suspended Solids:** Tracking of $CBOD_5$ and total suspended solids are required for percent removal requirements found in s. NR 210.05, Wis. Adm. Code and in subsection 5.4.6 of the permit.

# 2 Surface Water - Proposed Monitoring and Limitations

## 2.1 Sample Point Number: 001- EFFLUENT

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| $CBOD_5$ | Weekly Avg | 40 mg/L | 3/Week | 24-Hr Comp | |
| $CBOD_5$ | Monthly Avg | 25 mg/L | 3/Week | 24-Hr Comp | |
| Suspended Solids, Total | Weekly Avg | 45 mg/L | 3/Week | 24-Hr Flow Prop Comp | |
| Suspended Solids, Total | Monthly Avg | 30 mg/L | 3/Week | 24-Hr Flow Prop Comp | |
| pH Field | Daily Min | 6.0 su | Daily | Grab | |
| pH Field | Daily Max | 9.0 su | Daily | Grab | |
| Nitrogen, Ammonia (NH3-N) Total | Daily Max | 20 mg/L | 3/Week | 24-Hr Flow Prop Comp | Limit effective November-April. Monitoring only May-October. |
| Nitrogen, Ammonia (NH3-N) Total | Weekly Avg | 20 mg/L | 3/Week | 24-Hr Flow Prop Comp | Limit effective November-April. Monitoring only May-October. |
| Nitrogen, Ammonia (NH3-N) Total | Monthly Avg | 20 mg/L | 3/Week | 24-Hr Flow Prop Comp | Limit effective November-April. Monitoring only May-October. |
| E. coli | Geometric Mean - Monthly | 126 #/100 ml | Weekly | Grab | Limit effective May through September annually. |
| E. coli | % Exceedance | 10 Percent | Monthly | Calculated | Limit effective May through September annually. See the E. coli Percent Limit section in permit. Enter the result in the DMR on the last day of the month. |
| Phosphorus, Total | Monthly Avg | 1.0 mg/L | 3/Week | 24-Hr Flow Prop Comp | This is an interim limit and technology-based limit effective upon reissuance and throughout the permit term. |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Phosphorus, Total | 6-Month Avg | 0.6 mg/L | 3/Week | 24-Hr Flow Prop Comp | This is an Adaptive Management interim limit that will go into effect May 1, 2021. An interim limit of 0.5 mg/L may be effective during future permit terms. See schedules and effluent requirements in permit. |
| Phosphorus, Total | | lbs/day | 3/Week | Calculated | Calculate the daily mass discharge of phosphorus in lbs/day on the same days phosphorus sampling occurs. |
| Nitrogen, Total Kjeldahl | | mg/L | Quarterly | 24-Hr Flow Prop Comp | |
| Nitrogen, Nitrite + Nitrate Total | | mg/L | Quarterly | 24-Hr Flow Prop Comp | |
| Nitrogen, Total | | mg/L | Quarterly | Calculated | Total Nitrogen shall be calculated as the sum of reported values for Total Kjeldahl Nitrogen and Total Nitrite + Nitrate Nitrogen. |
| Acute WET | | TUa | See Listed Qtr(s) | 24-Hr Flow Prop Comp | Annually in rotating quarters. See WET Testing section in permit. |
| Chronic WET | Monthly Avg | 4.5 TUc | See Listed Qtr(s) | 24-Hr Flow Prop Comp | Annually in rotating quarters. See WET Testing section in permit. |

### 2.1.1 Changes from Previous Permit

**Total Ammonia Nitrogen:** Weekly average and monthly average limits of 20 mg/L during the months of November through April and monitoring 3 times per week during the months of May-October were added to the proposed permit.

**Fecal Coliform and E. coli:** Previous fecal coliform monitoring and limits have been replaced with Escherichia coli (E. coli) monitoring and limits. E. coli limits of 126#/100 ml as a monthly geometric mean and 410#/100 ml as a daily maximum (not to be exceeded more than 10 percent of the time in any calendar year) were also added to the proposed permit and become effective May 1, 2021.

**Total Phosphorus:** For this permit term, the Village of Mukwonago will begin implementing Adaptive Management Plan WQT-2020-0009 (May 2020) to meet the phosphorus water quality standard in s. NR 102.06, Wis. Adm. Code. A total phosphorus Adaptive Management Interim Limit of 0.6 mg/L will apply starting in 2021.

**Total Nitrogen Monitoring (TKN, N02 + N03 and Total N):** Quarterly monitoring was added to the proposed permit.

**WET Testing:** A chronic monthly average limit of 4.5 TUc was added to the proposed permit. Annual acute WET monitoring was added to the proposed permit.

**Temperature:** Temperature monitoring was removed from the proposed permit.

## 2.1.2 Explanation of Limits and Monitoring Requirements

**Categorical Limits**

- **Total $CBOD_5$, Total Suspended Solids, and pH:** Standard municipal wastewater requirements for $CBOD_5$, total suspended solids, pH, and dissolved oxygen are included based on ch. NR 210, Wis. Adm. Code 'Sewage Treatment Works' requirements for discharges to fish and aquatic life streams. Chapter NR 102, Wis. Adm. Code 'Water Quality Standards for Surface Waters' also specifies requirements for pH for fish and aquatic life streams.

**Water Quality Based Limits, WET Requirements, and Disinfection**

Refer to the "Water Quality-Based Effluent Limitations for the Mukwonago Wastewater Treatment Plant", prepared by Nicole Krueger, dated February 7, 2020 and used for this reissuance.

- **Total Ammonia Nitrogen:** Current acute and chronic ammonia toxicity criteria for the protection of aquatic life are included in Table 2C and Table 4B of ch. NR 105, Wis. Adm. Code (effective March 1, 2004). Subchapter IV of ch. NR 106 establishes procedures for calculating water quality-based effluent limitations (WQBELs) for ammonia (effective March 1, 2004).

  Regulatory changes to s. NR 205.065, Wis. Adm. Code, became effective September 1, 2016 and require limits in this permit to be expressed as weekly average and monthly average limits whenever practicable. Therefore, a weekly average limit of 20 mg/L (November-April), and a monthly average limit of 20 mg/L (November-April), were added to the proposed permit. Total ammonia nitrogen monitoring is required during the months of May through October.

- **E. Coli:** On May 1, 2020, revisions to chs. NR 102 and NR 210, Wis. Adm. Code, became effective and replace fecal coliform limits with new Escherichia coli (E. coli) limits for protection of recreation uses. Since the facility is required to disinfect, the following limits are included in the proposed permit in accordance with s. NR 210.06(2)(a)1, Wis. Adm. Code; a monthly geometric mean of 126#/100 ml and no more than 10 percent of E. coli bacteria samples collected in any calendar month may exceed 410 #/100ml. The facility has demonstrated the ability to consistently meet the new E. coli limits, therefore, limits will become effective on May 1, 2021, the start of the first disinfection season after reissuance.

- **Total Phosphorus**: The proposed permit will be Mukwonago's second permit term under new administrative rules for phosphorus discharges that took effect December 1, 2010. Details regarding the administrative rules for phosphorus discharges may be found at: http://dnr.wi.gov/topic/surfacewater/phosphorus.html. Phosphorus rules are contained in s. NR 102.06 and ch. NR 217, Subchapter III. A monthly average interim limit of 1 mg/L is effective upon reissuance. An Adaptive Management Interim limit of 0.6 mg/L expressed as a 6-month average (averaging period of May through October and November through April) becomes effective 5/1/2021.

- **Adaptive Management for Total Phosphorus Compliance:** Mukwonago requested, and the Department approved, a plan to implement a watershed adaptive management approach under s. NR 217.18, Wis. Adm. Code and s. 283.13(7) Wis. Stats. as a means for Mukwonago to achieve compliance with the phosphorus water quality standard in s. NR 102.06, Wis. Adm. Code. The phosphorus limitations and conditions in this permit reflect the approved Adaptive Management (AM) Plan WQT-2020-0009 (May 2020). The permittee shall design and implement the actions identified in the approved AM Plan No. WQT-2020-0009 (May 2020) in accordance with the goals and measures identified. The goal of the AM plan is to reduce phosphorus loadings within the watershed action area by at a minimum 41 lbs/yr by the end of the permit term. In addition, annual progress reports are required. See Schedules section for more details. The Department may terminate the AM option based on the reasons enumerated in NR 217.18(3)(e)2, Wis. Adm. Code.

  The permit contains an interim adaptive management phosphorus limit of 0.6 mg/L expressed as a six-month seasonal average starting May 1, 2021. The averaging periods for the six-month average limit are May through

October and November through April. Compliance with the 0.6 mg/L six-month interim limit is evaluated at the end of each six-month period on April 30 and October 31 annually. The 1.0 mg/L monthly average phosphorus limit in effect for the duration of the reissued permit.

Surface water monitoring requirements are included in the proposed permit in support of the goals and measures of the Adaptive Management Plan and are discussed in more detail in following subsections of this fact sheet. Sampling is required on the day(s) each week as outlined in the approved Adaptive Management Plan.

- **Whole Effluent Toxicity:** Whole effluent toxicity (WET) testing requirements are determined in accordance with ss. NR 106.08 and NR 106.09, Wis. Adm. Code, as revised August 2016. (See the current version of the Whole Effluent Toxicity Program Guidance Document and checklist and WET information, guidance and test methods at http://dnr.wi.gov/topic/wastewater/wet.html). Based on data collected from December 1994 to August 2019, no reasonable potential for acute whole effluent toxicity is shown, so a limit is not required. However annual acute WET testing is included per the requirements of 40 CFR Part 122.21 (j), as Mukwonago is a major municipal discharger. According to requirements specified in s. NR 106.08. Wis. Adm. Code, a chronic WET limit is included in the proposed permit. Chronic WET tests are scheduled in the following quarters: April-June 2021; July-September 2022; October-December 2023, April-June 2024, and January-March 2025.
- **Temperature:** Surface water quality standards for temperature took effect on October 1, 2010 and are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Based on effluent temperature data reported from December 2013 to November 2019, no effluent limits or monitoring are recommended, therefore, temperature monitoring has been discontinued in the proposed permit

## 2.2 Sample Point Number: 601- Fox River - Downstream

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow River | | cfs | Monthly | Measure | Provide an estimate of river flow for each day that in-stream phosphorus monitoring is performed May 1 through October 31 annually. |
| Flow River | | cfs | Per Occurrence | Measure | Voluntary river flow estimates for each day that in-stream phosphorus monitoring is performed November 1 through April 30 annually. |
| Phosphorus, Total | | mg/L | Monthly | Grab | Collect samples biweekly May 1 through October 31 annually. See permit subsections for sampling and reporting requirements. |
| Phosphorus, Total | | mg/L | Per Occurrence | Grab | Voluntary monitoring November 1 through April 30 annually. See permit |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| | | | | | subsections for sampling and reporting requirements. |
| Phosphorus, Total | | lbs/month | Monthly | Calculated | Calculate and report total monthly phosphorus loads for the months of May through October annually. See permit subsection for calculation of total monthly loads. |
| Phosphorus, Total | | lbs/month | Per Occurrence | Calculated | Calculated total phosphorus loads may also be reported for the months of November through April, as data is available. See Permit Subsection for calculation of total monthly loads. |

### 2.2.1 Changes from Previous Permit

Downstream surface water monitoring was not required during the previous permit term. Monitoring is included as part of the approved Adaptive Management Plan requirements.

### 2.2.2 Explanation of Limits and Monitoring Requirements

As part of the Adaptive Management Plan requirements, downstream monitoring for river flow rate, in-stream phosphorus concentration and total monthly in-stream phosphorus loads is required during the months of May through October. Monitoring for these same parameters is voluntary during the months of November through April. When voluntary monitoring is completed, results must be reported on the monthly eDMR. The in-stream phosphorus concentration and river flow rate are used to calculate the total monthly loading of phosphorus in the Fox River on a monthly basis. This monitoring will allow the permittee to demonstrate reductions in phosphorus loading for each month of the year.

# 3 Land Application - Proposed Monitoring and Limitations

| Municipal Sludge Description | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Point** | **Sludge Class (A or B)** | **Sludge Type (Liquid or Cake)** | **Pathogen Reduction Method** | **Vector Attraction Method** | **Reuse Option** | **Amount Reused/Disposed (Dry Tons/Year)** |
| 002 | B | Liquid | Fecal Coliform | Incorporation | Land Application | N/A |
| 003 | B | Cake | Fecal Coliform | Incorporation | Land Application | 600 dry U.S. tons (per 2019 application) |
| Does sludge management demonstrate compliance? **Yes** | | | | | | |

| Municipal Sludge Description | | | | | | |
|---|---|---|---|---|---|---|
| **Sample Point** | **Sludge Class (A or B)** | **Sludge Type (Liquid or Cake)** | **Pathogen Reduction Method** | **Vector Attraction Method** | **Reuse Option** | **Amount Reused/Disposed (Dry Tons/Year)** |
| Is additional sludge storage required? **No** | | | | | | |
| Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **Yes**<br>Special monitoring and recycling conditions are included in the permit to track any potential problems in landapplying sludge from this facility. | | | | | | |
| Is a priority pollutant scan required? **No** | | | | | | |

## 3.1 Sample Point Number: 002- Liquid Sludge - INACTIVE

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Solids, Total | | Percent | Annual | Composite | |
| Arsenic Dry Wt | Ceiling | 75 mg/kg | Annual | Composite | |
| Arsenic Dry Wt | High Quality | 41 mg/kg | Annual | Composite | |
| Cadmium Dry Wt | Ceiling | 85 mg/kg | Annual | Composite | |
| Cadmium Dry Wt | High Quality | 39 mg/kg | Annual | Composite | |
| Copper Dry Wt | Ceiling | 4,300 mg/kg | Annual | Composite | |
| Copper Dry Wt | High Quality | 1,500 mg/kg | Annual | Composite | |
| Lead Dry Wt | Ceiling | 840 mg/kg | Annual | Composite | |
| Lead Dry Wt | High Quality | 300 mg/kg | Annual | Composite | |
| Mercury Dry Wt | Ceiling | 57 mg/kg | Annual | Composite | |
| Mercury Dry Wt | High Quality | 17 mg/kg | Annual | Composite | |
| Molybdenum Dry Wt | Ceiling | 75 mg/kg | Annual | Composite | |
| Nickel Dry Wt | Ceiling | 420 mg/kg | Annual | Composite | |
| Nickel Dry Wt | High Quality | 420 mg/kg | Annual | Composite | |
| Selenium Dry Wt | Ceiling | 100 mg/kg | Annual | Composite | |
| Selenium Dry Wt | High Quality | 100 mg/kg | Annual | Composite | |
| Zinc Dry Wt | Ceiling | 7,500 mg/kg | Annual | Composite | |
| Zinc Dry Wt | High Quality | 2,800 mg/kg | Annual | Composite | |
| Nitrogen, Total Kjeldahl | | Percent | Annual | Composite | |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Nitrogen, Ammonium (NH4-N) Total | | Percent | Annual | Composite | |
| Phosphorus, Total | | Percent | Annual | Composite | |
| Phosphorus, Water Extractable | | % of Tot P | Annual | Composite | |
| Potassium, Total Recoverable | | Percent | Annual | Composite | |
| Radium 226 Dry Wt | | pCi/g | Annual | Composite | |
| PCB Total Dry Wt | Ceiling | 50 mg/kg | Once | Composite | Sample once in 2022. |
| PCB Total Dry Wt | High Quality | 10 mg/kg | Once | Composite | Sample once in 2022. |

### 3.1.1 Changes from Previous Permit:

No changes from previous permit.

### 3.1.2 Explanation of Limits and Monitoring Requirements

At this time, Outfall 002 is inactive, and the Village of Mukwonago should notify the Department in order to activate the outfall.

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204, Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07(7), Wis. Adm. Code, for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code.

Land application of waste shall be done in accordance with the permit conditions and applicable codes. All land application sites shall be approved prior to their use. To receive a list of approved sites, or to be notified of potential approvals, contact the WDNR compliance staff.

## 3.2 Sample Point Number: 003- Cake Sludge

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Solids, Total | | Percent | Annual | Composite | |
| Arsenic Dry Wt | Ceiling | 75 mg/kg | Annual | Composite | |
| Arsenic Dry Wt | High Quality | 41 mg/kg | Annual | Composite | |
| Cadmium Dry Wt | Ceiling | 85 mg/kg | Annual | Composite | |
| Cadmium Dry Wt | High Quality | 39 mg/kg | Annual | Composite | |
| Copper Dry Wt | Ceiling | 4,300 mg/kg | Annual | Composite | |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Copper Dry Wt | High Quality | 1,500 mg/kg | Annual | Composite | |
| Lead Dry Wt | Ceiling | 840 mg/kg | Annual | Composite | |
| Lead Dry Wt | High Quality | 300 mg/kg | Annual | Composite | |
| Mercury Dry Wt | Ceiling | 57 mg/kg | Annual | Composite | |
| Mercury Dry Wt | High Quality | 17 mg/kg | Annual | Composite | |
| Molybdenum Dry Wt | Ceiling | 75 mg/kg | Annual | Composite | |
| Nickel Dry Wt | Ceiling | 420 mg/kg | Annual | Composite | |
| Nickel Dry Wt | High Quality | 420 mg/kg | Annual | Composite | |
| Selenium Dry Wt | Ceiling | 100 mg/kg | Annual | Composite | |
| Selenium Dry Wt | High Quality | 100 mg/kg | Annual | Composite | |
| Zinc Dry Wt | Ceiling | 7,500 mg/kg | Annual | Composite | |
| Zinc Dry Wt | High Quality | 2,800 mg/kg | Annual | Composite | |
| Nitrogen, Total Kjeldahl | | Percent | Annual | Composite | |
| Nitrogen, Ammonium (NH4-N) Total | | Percent | Annual | Composite | |
| Phosphorus, Total | | Percent | Annual | Composite | |
| Phosphorus, Water Extractable | | % of Tot P | Annual | Composite | |
| Potassium, Total Recoverable | | Percent | Annual | Composite | |
| Radium 226 Dry Wt | | pCi/g | Annual | Composite | |
| PCB Total Dry Wt | Ceiling | 50 mg/kg | Once | Composite | Sample once in 2022. |
| PCB Total Dry Wt | High Quality | 10 mg/kg | Once | Composite | Sample once in 2022. |

## 3.2.1 Changes from Previous Permit:

No changes from previous permit.

## 3.2.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of municipal sludge are determined in accordance with ch. NR 204, Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5), Wis. Adm. Code. Requirements for pathogens are specified in s. NR 204.07(6) and in s. NR 204.07(7), Wis. Adm. Code, for vector attraction requirements. Limitations for PCBs are addressed in s. NR 204.07(3)(k), Wis. Adm. Code. Radium requirements are addressed in s. NR 204.07(3)(n), Wis. Adm. Code.

Land application of waste shall be done in accordance with the permit conditions and applicable codes. All land application sites shall be approved prior to their use. To receive a list of approved sites, or to be notified of potential approvals, contact the WDNR compliance staff.

# 4 Schedules

## 4.1 Watershed Adaptive Management Option Annual Report Submittals

The permittee shall submit annual reports on the implementation of AM Plan No. WQT-2020-0009 (May 2020) as specified in the "Phosphorus Limitations(s) and Adaptive Management Requirements" permit section and the following schedule.

| Required Action | Due Date |
|---|---|
| **Annual Adaptive Management Report:** Submit an annual adaptive management report. The annual adaptive management report shall:<br>o Identify those actions from Pages 14-17 of the approved adaptive management plan that were completed during the previous calendar year and those actions that are in progress;<br>o Evaluate collected monitoring data;<br>o Document progress in achieving the goals and measures identified in the approved adaptive management plan;<br>o Describe the outreach and education efforts that occurred during the past calendar year;<br>o Identify any corrections or adjustments to the adaptive management plan that are needed to achieve compliance with the phosphorus water quality standards specified in s. NR 102.06, Wis. Adm. Code;<br>o Describe any updates needed to Mukwonago's approved phosphorus optimization plan;<br>and<br>o Submit results from all sample points outlined in AM plan No. WQT-2020-0009 (May 2020) to the Department using the Department's Laboratory Data Entry System (LDES) | 03/31/2021 |
| **Annual Adaptive Management Report #2:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2022 |
| **Annual Adaptive Management Report #3:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2023 |
| **Annual Adaptive Management Report #4:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2024 |
| **Final Adaptive Management Report for 1st Permit Term:** Submit the final Adaptive Management (AM) report documenting progress made during the first permit term under AM in meeting the watershed phosphorus reduction target of 1,595 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2020-0009 (May 2020) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions. | 03/31/2025 |

| | |
|---|---|
| **Renewal of Adaptive Management Plan for Permit Reissuance:** If the permittee intends to seek renewal of AM plan No. WQT-2020-0009 (May 2020) per s. NR 217.18, Wis. Adm. Code, for the reissued permit term, proposed AM goals and actions based on an updated AM plan shall be submitted to the Department for review and approval. The permittee may propose to adjust load reductions required by AM plan No. WQT-2020-0009 (May 2020) either up or down at the beginning of each WPDES permit term to reflect changes in loads associated with point and non-point sources. This schedule may be modified to incorporate any changes in AM goals and actions, removed if the AM program is terminated per the "Adaptive Management Reopener Clause" permit section, or removed if the adaptive management plan has achieved water quality standards as determined by the Department within the AM action area. | 06/30/2025 |
| **Comply with Adaptive Management Interim Limit:** For the second permit term under Adaptive Management the permittee shall comply with an Adaptive Management total phosphorus interim limit no higher than 0.5 mg/L as a 6-month average, in addition to the 1.0 mg/L monthly avg already effective. | 04/01/2026 |
| **Annual Adaptive Management Report #6:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2026 |
| **Annual Adaptive Management Report #7:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2027 |
| **Annual Adaptive Management Report #8:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2028 |
| **Annual Adaptive Management Report #9:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2029 |
| **Final Adaptive Management Report for 2nd Permit Term:** Submit the final Adaptive Management (AM) report documenting progress made during the second permit term under AM in meeting the watershed phosphorus reduction target of 2,895 lbs/yr, as well as the anticipated future reductions in phosphorus sources and phosphorus effluent concentrations, which shall be measured in accordance with the AM Plan protocols. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2020-0009 (May 2020) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there shall be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions. | 03/31/2030 |
| **Renewal of Adaptive Management Plan for Permit Reissuance:** If the permittee intends to seek renewal of AM plan No. WQT-2020-0009 (May 2020) per s. NR 217.18, Wis. Adm. Code, for the reissued permit term, proposed AM goals and actions based on an updated AM plan shall be submitted to the Department for review and approval. The permittee may propose to adjust load reductions required by AM plan No. WQT-2020-0009 (May 2020) either up or down at the beginning of each WPDES permit term to reflect changes in loads associated with point and non-point sources. This schedule may be modified to incorporate any changes in AM goals and actions, removed if the AM program is terminated per the "Adaptive Management Reopener Clause" permit section, or removed if the adaptive management plan is has achieved water quality standards as determined by the Department within the AM action area. | 06/30/2030 |
| **Annual Adaptive Management Report #11:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2031 |

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| **Annual Adaptive Management Report #12:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2032 |
| **Annual Adaptive Management Report #13: Submit** an Adaptive Management report with the required information described in this section (see above). | 03/31/2033 |
| **Annual Adaptive Management Report #14:** Submit an Adaptive Management report with the required information described in this section (see above). | 03/31/2034 |
| **Final Adaptive Management Report:** Submit the final Adaptive Management (AM) report documenting progress made throughout the AM project in meeting the watershed phosphorus reduction target of 4,115 lbs/yr, and in stream water quality standards specified in s. NR 102.06, Wis. Adm. Code. The report shall summarize AM activities that have been implemented during the current permit term and state which, if any, actions from the approved AM plan No. WQT-2020-0009 (May 2020) were not pursued and why. The report shall include an analysis of trends on both a monthly and six-month average basis for concentrations and mass effluent discharged. Additionally, there should be an analysis of any improvements to the quality of surface waters in the Adaptive Management Action Area focusing on phosphorus and flow results collected during the permit term. The surface water analysis shall evaluate how the in-stream loadings have changed over the permit term in comparison to implemented AM actions. | 03/31/2035 |
| **Achieve Water Quality Standards and Adaptive Management Plan Success:** All the receiving waters identified within the AM plan WQT-2020-0009 (May 2020) shall comply with water quality standards specified in s. NR 102.06, Wis. Adm. Code. The permittee shall continue to comply with applicable effluent limits (required under s. 217.18(3)(e)3. expressed as a 6-month avg and 1.0 mg/L monthly avg) and continue monitoring surface waters WQT-2020-0009 (May 2020) at a minimum of monthly May through October for total phosphorus. | 12/31/2035 |

### 4.1.1 Explanation of Schedule

This compliance schedule requires the permittee to submit annual adaptive management (AM) annual reports that show progress towards meeting the goals and measures contained in the approved AM plan. The final AM Report for this permit term must document the success of meeting the watershed phosphorus minimum reduction target of 41 lbs/yr. The compliance schedule may be modified at permit reissuance, should changes in AM goals and measures or timing necessitate different dates for schedule items.

## Attachments:

Substantial Compliance Determination dated April 23, 2020 and prepared by Nick Lent.

Water Quality Based Effluent Limitations for the Mukwonago Wastewater Treatment Plant dated February 7, 2020 and prepared by Nicole Krueger.

## Proposed Expiration Date:

December 31, 2025

## Justification Of Any Waivers From Permit Application Requirements

No waivers were given from permit application requirements.

**Prepared By:** Lisa Creegan, Wastewater Specialist

**Date:** 9-23-2020

**Revised Date (post fact check):** 10-12-2020

**Revised Date (post public notice):**